rejections, and therefore these claims have been retained in dependent form at this time.

Independent claim 14 of the present application includes the claim element of a circuit for detecting all positive and negative charges that are generated by the sensor and, after detecting these charges, for removing substantially all of the generated positive and negative charges from the sensor, for maintaining an accumulated charge potential of the sensor at a substantially zero level. This circuit also performs the function of generating a sensor output current from the detected positive and negative charges. Applicants respectfully submit that the Mann et al. reference does not disclose any circuitry for performing the aforementioned function of removing substantially all of the generated positive and negative charges from the sensor so as to maintain an accumulated charge potential of the sensor at a substantially zero level. Applicants therefore submit that the Mann et al. reference does not anticipate claim 14, nor any of the claims depending therefrom.

As described in the paragraph bridging pages 1 and 2 of the substitute specification, a problem that is associated with certain types of biomedical sensors, such as a piezoelectric sensor, is that charge leakage occurs, and this has a negative influence on the accuracy of the measurements obtained with such a sensor. This problem has been recognized by those of ordinary skill in the art, and has been conventionally addressed by the use of a voltage amplifier having a very high input impedance. As described in the aforementioned paragraph in the substitute specification, however, this solution involves a very large resistance component, which generally is undesirable in the context of a medical implant. Moreover, as also stated in this paragraph, the use of a high impedance amplifier still does not completely solve the problem of leakage charges, and therefore some type of calibration procedure normally is required, with the results of the calibration procedure being stored in a memory, so that the memory contents can be used to "adjust" or "correct" the actual integrated signal to compensate for the presence of leakage charges.

The apparatus disclosed and claimed in the present application takes a different approach to solving this problem, namely by the use of the aforementioned circuit that operates to maintain the accumulated charge potential of the sensor at a substantially zero level. Since the accumulated charge is always maintained a zero level, leakage charges have no opportunity to arise, and only the charges representing the actual measurement reach the integrator and contribute to the integrated signal.

The Mann et al. reference simply does not recognize this problem, and therefore provides no solution thereto. In the substantiation of the rejection based on the Mann et al. reference under 35 U.S.C. §102(b), the Examiner did not make any mention whatsoever of this claim element. The Examiner's substantiation of the rejection of claim 14 based on the Mann et al. reference focused exclusively on the manner by which charges are detected and integrated, but did not indicate any teaching or disclosure in the Mann et al. reference directed to the aforementioned circuit for maintaining the accumulated charge level at the sensor substantially equal to zero.

The Mann et al. reference, therefore, does not disclose all of the elements of claim 14, and therefore does not anticipate claim 14. Claims 15, 21 and 26 add further structure to the novel combination of claim 14, and therefore are not anticipated by the Mann et al. reference for the same reasons discussed above in connection with claim 14.

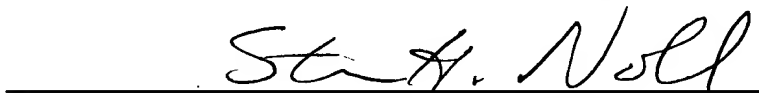
As to the rejections of claims 16 and 22-24 under 35 U.S.C. §103(a) based on Mann et al. and Lidman et al., and the rejection of claim 25 based on Mann et al. and Barreras et al., for the above reasons Applicants respectfully submit that even if the Mann et al. reference were modified in accordance with the teachings of either of these secondary references, the subject matter of these dependent claims still would not result, since they all embody the subject matter of claim 14 therein. Since the Examiner did not address the lack of teaching in the Mann et al. reference with regard to the circuit for maintaining the accumulated charge level at the sensor substantially equal to zero, there is no information in the Office Action as to whether, or why, the Examiner is taking a position that the inclusion of such circuitry

would have been obvious to a person of ordinary skill in the field of pacemaker design. Since the Mann et al. reference does not even address the aforementioned problem of leakage charges, however, Applicants submit that a person of ordinary skill in the field of pacemaker design would find no information whatsoever in the Mann et al. reference with regard to a solution to this problem. Neither of the secondary references address this problem either, and therefore even if the aforementioned combinations proposed by the Examiner were actually made, the problem of leakage charge still would exist.

Claims 16 and 22-25, therefore, would not have been obvious to a person of ordinary skill in the field of pacemaker design based on the teachings of the Mann et al. reference in combination with either of the secondary references.

All claims of the application are therefore submitted to be in condition for allowance, and early reconsideration of the application is respectfully requested.

Submitted by,



(Reg. 28,982)

SCHIFF, HARDIN LLP
CUSTOMER NO. 26574
Patent Department
6600 Sears Tower
233 South Wacker Drive
Chicago, Illinois 60606
Telephone: 312/258-5790
Attorneys for Applicants.